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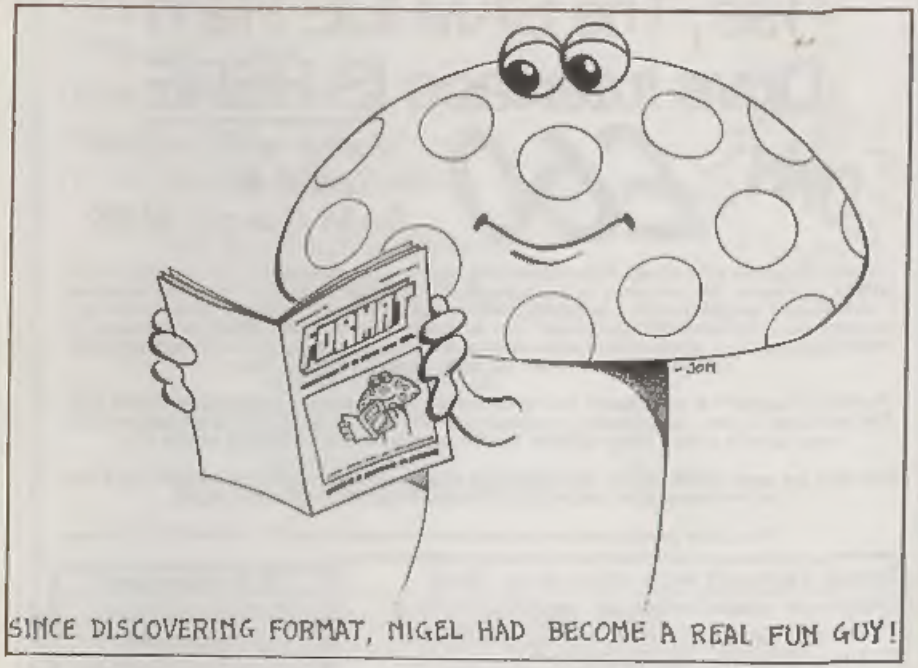
FORMAT

THE *HOME* OF Z80 COMPUTING



There's Not Mushroom Inside

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The Editor Speaks

March has not been a good month for me, I've been surrounded by cold and flue germs (luckily I've escaped so far) and then I've been off with a Kidney infection. This has meant a delay with the launch of **FORMAT PC** (cos there are only so many hours in the day) but final details will be in next months ***FORMAT*** together with special deals on getting copies as an extra to your current INDUG membership.

Of course the Spring Gloucester Show, just around the corner now on Saturday the 20th April, is something everyone in the Spectrum and SAM world looks forward to. It is a chance to meet people, see software and hardware and get a few bargains as well. For more details see the centre pull-out supplement in this issue. Don't miss it, please, your support for the shows helps to keep enthusiasm alive, not only among other users but also with the software/hardware companies themselves. Our past shows have been very successful, lets all make this one an even bigger success.

And now as they say, to something completely different. Some of you will be aware that there has been a long running battle between two factions in the Spectrum PD/disc mag world. Mud slinging is an understatement. We have kept out of the politics of the matter and decided long ago to give no free publicity to either side (if they want to pay for adverts then that is different). However, it has come to our attention that one side in the issue has been bringing into disrepute ***FORMAT***'s hard earned reputation for customer service by telling a story that is only half true and is then further distorted by a deliberate lie on the part of the publisher. We are keeping an eye on the situation, and would like to thank the person who sent us a copy of the offending article.

Until next month.

Bob Brenchley, Editor.

NEWS ON 4

AMSTRAD CUTS JOBS

Amstrad is cutting 150 jobs as it struggles in the low-end PC market. Many of the job losses will be in the direct sales division when the sales operations of Amstrad Direct and Viglen (which Amstrad took over last year) are merged over the next few months.

At one time Amstrad was doing nearly £600 million worth of business, mostly through retail giants like Dixons and Comets. Since changing to direct selling to end users Amstrad has lost a considerable share of the market although it has seen its 'margins per unit sale' increase because there is no longer dealer margins to take into account.

Amstrad are reported to be looking at producing a new range of 'high end' PC for launch later this year.

SEGA THEME PARK

Console giant SEGA will open the world's largest indoor theme park in London in August and will spend well over £1 million promoting the launch.

SEGAWORLD, occupying seven floors of the Trocadero in central London, will offer six themed interactive VR rides and will be aimed at families and tourists. The park will be able to cater for up to 3,000 visitors at a time and around 1.5 million are expected in the first year.

GAMES SHOWS AXED

The writing is on the wall for Video Games shows on TV. *Bad Influence* and *T.I.G.S* on ITV together with *Total Reality* and *Reactive* on the BBC have all failed to have options taken up for new series for the autumn '96 schedules.

Poor audience figures are blamed and this is in part further blamed on the high prices charged for modern games.

The BBC has said that it will integrate some of its games coverage into other 'magazine style' programs in the future, but ITV have so far refused to comment.

SHORT • SPOT

YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

Once again, Bob's bawling for Short Spot, and has caught me unawares. So once again, I'm burning the midnight oil. Funny, isn't it, how long a month looks just as I've handed over my copy, and how short it is in reality! Enough of this: let's get on.

First, a little offering from Alf Prilloof of Bexley. He has been interested for some time in the workings of the new hard disc for SAM, and the way in which it is set up. As he is also a musician, he has a particular interest in CD units, and their incorporation into mainstream IBM- compatibles has given him much food for thought. So far, he has written the following piece of code, a combination of bits from 'PC suite' and simplified stuff from several authors, which will take a PC clipart picture off a CD via the tape input, modify it and so display it (in Mode 1 on SAM). However, he just cannot manage any way to get SAM's sound chip to play music from a CD. Nevertheless, he thought, firstly, that readers might like to have a look at the way the picture's arrived at, and secondly, therefore, after seeing how it works, those same readers could make some suggestions as to the music problem. How about it folks?

Anyway, here's the program.

```
10 REM CD PIC LOADER
20 REM FOR SAM OR SPECTRUM
30 REM ON SAM SET MODE 1 FIRST
40 REM FOR SHORT SPOT APRIL'96
50 LET ADDR=40000
60 FOR I=0 TO 64: READ A: POKE
   ADDR+I,A:NEXT I
70 LET B=USR ADDR
80 DATA 73,102,32,121,111,117,
   32,97,114,101,32,114,101,97
   ,100,105,110,103,32,116,104
   ,105,115,32,116,104,101,110
   ,32,121,111,117,32,107,110,
   111,119,32,116,104,105,115,
   32,105,115,32,97,110,32,65,
   112,114,105,108,32,70,111,1
   11,108,32,106,111,107,101,4
   ■
```

Many thanks, Alf.

I seemed to have opened a can of worms when I published Mr Kempees' program on Roman to Arabic last month, for I've had a number of letters on the subject; really rather too many to deal with, for some of them repeat what others say, and I'd hate to bore everyone to tears. Nevertheless, there's clearly a lot of interest in this little problem, so here goes....

The first letter comes from Ettrick Thomson of Aldeburgh, Suffolk, who writes that he has been battling for some few months with SAM C, and has therefore not looked too closely at Short Spot (just as well!!!).

However, a glance at March's issue filled him with inspiration, for some years ago he devised a listing to convert from Roman to denary and back again. It is written in SAM Basic and uses many of its facilities, particularly the long IF. The procedure, decade, which is at the heart of converting Roman, is really just one IF statement, which is based on the possible sequences that may arise in one decade of a roman number. Consider the hundreds decade, with characters C,D,M: the first character is either C or D (or it

may be none of them if there are no 100s); if it is C, it can be followed by 0,1,2, or 3 Cs or by a single D or a single M; if it is D, it can be followed by 0,1,2,3 or 4 Cs. So the program considers these possibilities, and the consequent build-up of the denary number. Similarly for tens, with characters X,L,C and units with I,V,X; Ms are easy, of course, each M adding 1000. It is a complicated process, and this explanation is probably too brief. Never mind: if you are into producing a program now, Ettrick's is neatly programmed, and gives you lots of basic ideas. Here it is...

```
  5 REM Roman Numerals:Ettrick
    Thomson:
 10 LET f=1: POKE SVAR 618,0
 20 DO : CLS
 30 PRINT "To convert"''' roma
    n to denary: press key r"'
    " denary to roman: press k
    ey d"''"To stop: press key
     s"
 40 DO : GET c$: LET c=INSTR("
    rds",c$)
 50 LOOP UNTIL c
 60 ON c:romden:denrom: LET f=
    0
 70 LOOP WHILE f
 80 STOP
100 DEF PROC romden
110 CLS : POKE SVAR 618,8
120 DO
130 INPUT #2; "Roman Number:"'
    LINE r$;
140 LET r$=r$+"."
150 LET n=1,d=0
160 decade 1000,"M","",""
170 decade 100,"C","D","M"
180 decade 10,"X","L","C"
190 decade 1,"I","V","X"
200 IF r$(n)="." THEN : PRINT
    "=";d: ELSE : PRINT " is n
    ot a Roman number"
210 PRINT #0;"Another? (Y/N)"
220 GET c$
230 LOOP WHILE c$="Y"
240 POKE SVAR 618,0
250 END PROC :
300 DEF PROC decade u,a$,b$,c$
310 IF r$(n)=a$: LET d=d+u,n=n
    +1
320 IF r$(n)=a$: LET d=d+u,n=n
    +1,c=0
330 DO WHILE r$(n)=a$ AND c<2
340 LET d=d+u,n=n+1,c=c+1: LOO
    P
350 ELSE IF r$(n)=b$: LET d=d+
    3*u,n=n+1: ELSE IF r$(n)=c
    $: LET d=d+8*u,n=n+1
360 END IF
370 ELSE : IF r$(n)=b$
380 LET d=d+5*u,n=n+1,c=0
390 DO WHILE r$(n)=a$ AND c<4
400 LET d=d+u,n=n+1,c=c+1: LOO
    P
410 END IF : END IF
420 END PROC :
500 DEF PROC denrom
510 CLS : LET r$="***MDCLXVI"
520 DO
530 DO : INPUT #2;"Denary Numb
    er (<5000):"'d;"=";
540 EXIT IF d<5000
550 PRINT "Invalid number"
560 LOOP
570 LET d$=(STR$ (10000+d))(2
    TO )
580 FOR i=1 TO 4
590 roman VAL d$(i),r$(2*i-1 T
    O 2*i+1),i-1
600 NEXT i: PRINT
610 PRINT #0;"Another? (y/n)"
620 GET c$: LOOP WHILE c$="y"
630 END PROC :
700 DEF PROC roman p,q$,f
710 LOCAL u,v
720 LET u=p>4,v=p-(5 AND u)
730 IF v=4 AND f THEN : PRINT
    q$(3);q$(2-u);: ELSE : PRI
    NT q$(2) AND u;STRING$(v,q
    $(3));
740 END PROC
```

Many thanks, Ettrick.

Mr Symes of Easton, Winchester has also dropped me a line. I don't like typing in programs; I usually make mistakes. A disc is not very expensive and makes all the difference: what's more, I can check things out to see if they work. However, I thought you would be interested in Gerald's program, for I think he has adopted quite a different approach from Ettrick. He sent his programs along in

good time for me, and they're fairly short. Only problem is, I can't check them out. Anyway, let's have a quick look at them...

```
 10 REM convert Arabic to Roma
    n
 20 LET r$="": LET f=1000: LET
     c=1: LET r=2
 30 LET c$="MDCLXVI"
 40 INPUT "Arabic number ";n
 50 PRINT n;" ";
 60 FPR a=1 TO 4
 80 LET L=INT (n/f)
100 IF L>0 and L>4 THEN FOR b=
    1: LET r$=r$+c$(c): NEXT b
120 IF L=4 THEN LET r$=r$( TO
    LEN r$-(r-1))+c$(c)+c$(c-r
    )
130 LET r=2
140 LET n=n-L*f
160 LET f=f/2: LET c=c+1
220 LET L=INT (n/f)
230 IF L THEN LET r$=r$+c$(c)
235 IF NOT L THEN LET r=1
250 LET n=n-L*f
260 LET f=f/5: LET c=c+1
280 NEXT a
300 PRINT r$
320 GOTO 20
690 STOP
```

My first problem when I came to type this one in is that Mr. Symes has used lower case l instead of capital L as an unknown. I think I've picked them all out, but can I ask you to avoid this when sending in programs, as it leads to ambiguities if one tries to type a program in, and is even worse if the program's on disc (one of the few disadvantages), for it's then very difficult to spot, and we have to rely on your good taste and common sense to avoid this.

Anyway, can you see how it works? I can't test it: type it in, check it out and let me know!

Now its partner to convert Roman to Arabic numerals. This one's very crisp and very neat. I can't altogether fathom it with a cursory glance, but if it's doing what I think it's doing, all the really hard work is in line 160, where it checks to see if a Roman cipher is preceded by one. Or does it? C'mon, type it in and check it out!

```
 10 REM convert Roman to Arabi
    c numerals
 20 READ I,V,X,L,C,D,M
 40 DATA 1,5,10,50,100,500,100
    0   100 INPUT "Roman numbe
    r ";n$
120 LET n=VAL n$(1)
140 FOR a=2 TO LEN n$
150 LET n=n+VAL n$(a)
160 IF VAL n$(a)>VAL n$(a-1) T
    HEN LET n=n-2*VAL n$(a-1)
170 NEXT a
180 PRINT n$;"=";n
```

So, how does it really work?

Many thanks, Gerald. But please, next time, send me a disc: it saves all the hassle of typing a program in (about fifteen times as long per line than text), and it also avoids transcription errors, which I'm good at making.

Now a similar little problem. I've just had a letter (closely printed in 10 point Times New Roman) from Matthew Westcott. The letter contains full instructions for me to type in, along with the accompanying full-page program, again the same problem. Sorry, folks, I just can't do it. A straight page of copy-typing - fine: I can touch-type. But a page full of program is a different cuppa tea. It'll take hours and hours, and in the end, I'll probably get half of it wrong. Sorry, Matthew, I can't cope with it. Please send me a disc. Perleaze... Then we'll put it in another time....

Now back to Ettrick Thomson. In addition to his solution to the Roman Arabic problem, Ettrick also comments on Roy Burford's troubles last month over INT not doing what he wanted. In point of fact, Roy's examples show INT behaving according to its specification, namely that if n<x and x<(n+1) then INTx=n. For Roy's program, the tidiest

way would be to define a function, DEF FN T(x)=SGNx*INT ABSx; then T(15.5)=15 and t-15.5)=-15, which is what is wanted to preserve symmetry.

Many thanks Ettrick; please keep them coming.

Funnily enough, I've also got a few bits and pieces from Roy Burford of Norton, Stourbridge. The first item was inspired by an item on various binary bits and pieces by 'Dipole' in *IEE News* about Russian Division. "Russian What???." I hear you cry! Well, to divide 456 by 78, first multiply 78 by 2. Now take the answer and multiply this by 2. Do this enough times so that you just don't quite reach 456. The intermediate results are 78, 156 and 312. Merely subtract these successively from 456 if it is possible, like this...

456-312=144

(Of course, 312=78x4)

Now subtract the next one down, 156.

144-156

(This, of course, can't be done, so ignore it and go on to the next value).

144-78=66, remainder 5

So 456 divided by 78 gives 5, remainder 66 (weird, isn't it; seems the wrong way round to me). 'Dipole' also wondered if the method could be extended to show fractions instead of a remainder.

Enter Roy with his Spectrum. The first thing he did was to devise an algorithm to do the job: clearly an organized subtraction process to effect the division of an integer by a smaller one. He also wrote a program to do it. Finally, by longhand calculation, Roy carried on and found a fraction rather than a remainder, by using the reciprocal of each power of two successively. However, he did not expand the algorithm or the program, since it is likely the method was intended as integer arithmetic. Roy also feels that the binary connection mentioned by 'Dipole' is inherent in the method, rather than part of any theory. Perhaps our readers might have some historical information which could help. Any offers?

Anyway, here's a listing of the program, with our thanks to Roy.

```
  1 REM Dipole's Column. p18. I
    EE News. 30November 1995. R
    ussian Division.
  2 REM J.Keith Wood's algorith
    m interpreted on ZX Spectru
    m+ 128K by B.C.R.Burford 12
    0196.
 20 CLS
 40 DIM p(33): DIM m(33)
 60 LET p(1)=1: LET a=1
 80 FOR c=2 TO 33
100 LET a=a*2: LET p(c)=a
120 NEXT c
140 PRINT TAB 7;"Russian Divisi
    on"
150 PRINT '"Dividend,Divisor ?"
160 INPUT dd,dr
180 IF INT (dd)<>dd OR INT (dr)
    <>dr OR dr>dd OR dr<1 THEN
    GOTO 160
190 PRINT '"    ";dd;"/";dr
200 LET n=0
220 LET m(n+1)=dr*p(n+1)
240 IF m(n+1)=dd THEN LET hp=n:
     GOTO 320
260 IF m(n+1)>dd THEN GOTO 300
280 LET n=n+1: GOTO 220
300 LET hp=n-1: LET m(n+1)=0
320 LET q=0: LET r=dd
340 LET r=r-m(hp+1): LET q=q+p(
    hp+1)
360 IF hp<1 THEN GOTO 500
380 IF r>=m(hp+1) THEN GOTO 340
400 IF r>=m(hp) THEN LET hp=hp-
    1: GOTO 340
420 LET hp=hp-1: GOTO 360
500 PRINT '"Quotient= ";q: PRIN
    T '"Remainder= ";r
520 PRINT '"Another one?  Y/N:"
540 LET a$=INKEY$: IF a$="" THE
    N GOTO 540
560 IF a$="y" OR a$="Y" THEN CL
    S : GOTO 140
600 STOP
```

Nice little note next from Dave

Marriott of Long Eaton, Nottinghamshire, who mentions that in respect of Stephen McGreal's 'Bugs' program for SAM in February's Short Spot, many of the ASCII codes below 32 will give strange effects if one tries to print with them in this sort of RND loop, and some have a strange effect only when generated from the keyboard, otherwise you merely get a '?' when printed. Stephen has done some of the work by blocking out codes 18 through 21 in Line 35, but just didn't block out enough of them! As far as Dave's information goes, some of the effects are as follows:-

```
CHR$ 6 - caps lock toggle
CHR$ 7 - Edit current line
CHR$ 8 - Cursor left
CHR$ 9 - Cursor right
CHR$ 10 - Cursor up
CHR$ 11 - Cursor down
CHR$ 12 - Delete
CHR$ 13 - Carriage return
CHR$ 14 - Delete right
CHR$ 15 - Numlock toggle
CHR$ 16 - PEN . . .
CHR$ 17 - PAPER . .
CHR$ 18 - FLASH . .
CHR$ 19 - BRIGHT . .
CHR$ 20 - INVERSE . .
CHR$ 21 - OVER . .
CHR$ 22 - AT . .
CHR$ 23 - TAB . .
```

Codes 16 through 23 complicate things because they tell SAM that the next value will be the Pen colour, Paper colour, or whatever, and obviously with a random number, that value will sometimes be valid and sometimes not.

The best bet for printing random characters is to stick to the valid ASCII range of 32 to 127. This could be achieved by setting the variable 'c' in line 30 to 'RND(96)+32', which will obviate the need for line 35.

Many thanks for putting it so neatly and clearly, Dave.

Now back to the Spectrum again. Ted Cooke-Yarborough of Longworth, Abingdon, has sent me an antique; a 5.25" Spectrum/PLUS D 40-track disc, which we have managed to decipher. It has a neat little program on it which I rather like, and, because it's been hanging round for a couple of months, waiting for me to have the energy to sort it out, I'd better tell you just what Ted says. "The basic idea," writes Ted, "comes from a computer toy which someone gave to our six-year old grandson for Christmas. One of the many options built in is a typing exerciser. This puts a string of random letters on the screen, one at a time, at a predetermined rate. You have to cancel each letter in turn by keying the same letter. If you let the backlog of random letters get too big, you are eaten by a shark!!! Unfortunately, the program seems to have a fault: quite often the keyed character fails to register. This puts you off your stroke quite seriously." So, like Win95's sample video and the fish, it's "Not so good, Al""

Ted set out to write a similar program on the Spectrum; one which works! The result is called 'Touchtype', is liberally annotated with explanatory REMs, and improves on the original in two ways...

If Ted used INKEY$, he found that the program missed occasional keyed characters, rather like the original. Even putting INKEY$ into a loop is not much use if the computer is busy doing something else. The solution, Ted found, was to introduce the section centred around Line 70. In this line, PEEK 23560 provides the keyed character picked up at the regular Non-Maskable Interrupt, independent of whatever the program may have been doing. Immediately POKEing zero into the same address prevents any further

random characters from being cancelled until a key is hit again. The program now misses no characters.

Because the program is written in Basic, it slows as the backlog of random letters grows. It can therefore cover quite a wide range of typing speeds (less than 10 words per minute to over 50 words per minute) without requiring the program speed to be reset.

The varying size of the backlog has made it possible to put speed calibrations on the screen. If necessary, changing Line 80 from PAUSE 1 to PAUSE 18 will make the program run 10 times slower, and that should cover almost all eventualities.

Go on, type it in; give it a whirl!!!

```
 10 REM touchtype
 20 CLS : PRINT "Type left-hand
    letters to delete them.  T
    ry to keep up": PRINT AT 9,
    0;"Words per minute:-"
 25 PRINT AT 11,28;CHR$ 124: PR
    INT AT 11,21;CHR$ 124: PRIN
    T AT 11,8;CHR$ 124: PRINT A
    T 10,27;50: PRINT AT 10,20;
    20: PRINT AT 10,7;10: REM M
    arkers for typing speeds
 30 DIM a$(33): LET z=1: REM Ar
    ray representing contents o
    f line on screen. z is posi
    tion of the letter at the l
    eft end.
 40 FOR n=z TO 1 STEP -1: REM G
    o to the right along line o
    f letters.
 50 LET a$(n+1)=a$(n): REM shif
    ting each letter one place
    to the left
 60 PRINT AT 12,(31-n);a$(n): R
    EM and writing it on the sc
    reen.
 70 IF PEEK 23560=CODE a$(z) TH
    EN POKE 23560,0: LET a$(z)=
    " ": PRINT AT 12,(31-z+1);a
    $(z): LET z=z-1: REM If the
     letter just keyed is the s
    ame as the left-end letter,
     delete this letter and mov
    e left end of line one plac
    e to the right.
 80 PAUSE 1: REM This controls
    speed.
 90 NEXT n: REM Left-shift next
     letter on line.
100 LET a$(1)=CHR$ (97+INT (26*
    RND)): PRINT AT 12,31;a$(1)
    : REM New random letter pla
    ced in array and at right e
    nd of line.
110 LET z=z+1: REM Left end of
    line shifted one place to t
    he left.
120 IF z>32 THEN PRINT AT 17,12
    ;"TOO SLOW!": GOTO 120: REM
     Terminate when letters rea
    ch left side of screen.
130 GOTO 40: REM Repeat.
```

Many thanks for that, Ted.

Now stay where you are: don't go away, for Ted's got some useful information. He mentions that he is typing my letter on a Tandy Model I computer, and we earlier had correspondence on transferring files to and fro between this and a Z88. Since then, Ted has written some simple software to get the Model I sending and receiving e-mail, and finds that if he connects the Z88 to the RS232 socket in place of the modem, files can be sent either way using the Z88 Import/Export option and the e-mail software in the Model I. One would think, therefore, that one ought to be able to connect the Z88 to the modem and use it for e-mail: indeed, Ted would like to do this, but it doesn't seem to work. Can anyone help?

Finally, Ted, many thanks for your kind words, and thanks, too, for the programs and information.

Now a few more Spectrum bits and pieces from our evergreen Miles Kinloch of Edinburgh. The first is an equation-solver called solvex. There are two main sections to this program: lines 120-300 determine the upper and lower values of an interval containing 'x', the variable to be solved for. Lines 320-360

then apply a technique known as the 'Bisector Method' to this interval, narrowing it down by successive iterations until it is finally reduced to a single value, 'x' itself. Due to the Spectrum's limitations, occasional slight roundings may occur, for instance a value of 6 may instead be displayed as 5.9999999. Miles would be particularly interested if anyone could suggest possible improvements to avoid this problem. Here it is...

```
 10 REM          SOLVEX
 20 REM
 30 REM (PD) Miles Kinloch 1992
 40 REM
 70 DEF FN g(x)=VAL a$
 80 CLS : PRINT "This program i
    s designed only  for equat
    ions where x is NOT  RAIS
    ED TO A POWER, so will not
     cope with quadratics etc."
 90 PRINT '"When typing in your
     equation,  you need not i
    nsert '*' where a multiplic
    ation sign would not benece
    ssary in standard algebraic
     notation: e.g. 2(3x+4)=16x
    /2 canbe entered as it stan
    ds. You mayuse the Spectrum
    's functions in your equati
    ons, but you MUST usethe Sp
    ectrum tokens: for examples
    IN x=COS x must NOT be spel
    led out S-I-N x=C-O-S x etc
    ."
100 PRINT '"Remember to include
     brackets in cases such as
     8/(2x+2)=2 when  you mean
     to divide 8 by the sum of 2
     x and 2. (In textbooks, thi
    swould be written with the
    2x+2";#0; AT 0,0;"UNDER the
     division line, and so with
    out the brackets.)": PAUSE
    1: PAUSE 0: CLS
110 IF LEN INKEY$ THEN GOTO 110
120 INPUT AT 0,0;"Enter equatio
    n in terms of x:-"' LINE e$
    : IF NOT LEN e$ THEN BEEP .
    8,-15: GOTO 110
130 PRINT AT 0,0;e$;#0; AT 0,0;
    "Finding interval containin
    g x...": LET b$=e$: LET a=0
140 LET a=a+1: IF a=LEN b$ THEN
     GOTO 170
150 IF (b$(a)>="0" AND b$(a)<="
    9" OR b$(a)="x" OR b$(a)="X
    " OR b$(a)="(" OR b$(a)=CHR
    $ 167) AND (b$(a+1)="x" OR
    b$(a+1)="X" OR b$(a+1)="(" 
    OR b$(a+1)=CHR$ 167) THEN L
    ET b$=b$( TO a)+"*"+b$(a+1
    TO )
160 GOTO 140
170 LET a=0
180 LET a=a+1: IF b$(a)="=" THE
    N LET c$=b$(a+1 TO ): LET b
    $=b$( TO a-1): GOTO 200
190 GOTO 180
200 LET a$=b$+"-("+c$+")": LET
    x$="": LET d=1e-7: LET e=2e
    -7: LET g=1e-7: LET n=1: LE
    T p=1: LET q=2
210 IF FN g(d)=FN g(e) THEN LET
     d=d*10: LET e=e*10: GOTO 2
    10
220 LET r=(FN g(e)<FN g(d)): IF
     FN g(g)<0 AND NOT r OR FN
    g(g)>0 AND r THEN GOTO 270
230 LET a=0: IF FN g(g)>0 AND N
    OT r OR FN g(g)<0 AND r THE
    N LET a=1: LET h=g: LET g=g
    -p: LET p=p*q: IF n THEN IF
     ABS (FN g(h)-FN g(g))<5e-7
     THEN LET g=-g: LET q=.5: L
    ET p=p*q: LET n=0
240 PRINT #0; AT 1,0;g,: IF FN
    g(h)<FN g(g) AND NOT r OR F
    N g(h)>FN g(g) AND r THEN L
    ET g=g+.5*(h-g): GOTO 240
250 IF a THEN GOTO 230
260 LET l=g: GOTO 310
270 LET a=0: IF FN g(g)<0 AND N
    OT r OR FN g(g)>0 AND r THE
    N LET a=1: LET l=g: LET g=g
    +p: LET p=p*q: IF n THEN IF
     ABS (FN g(l)-FN g(g))<5e-7
     THEN LET g=-g: LET q=.5: L
    ET p=p*q: LET n=0
280 PRINT #0; AT 1,0;g,: IF FN
    g(g)<FN g(l) AND NOT r OR F
    N g(g)>FN g(l) AND r THEN L
    ET g=g-.5*(g-l): GOTO 280
290 IF a THEN GOTO 270
300 LET h=g
310 PRINT #0; AT 0,0;"Homing in
    ...",,
```



```
320 LET x=.5*(h+l): LET v=FN g(
    x): IF STR$ x=x$ THEN GOTO
    360
330 LET x$=STR$ x: PRINT #0; AT
     1,0;x$,
340 IF v<0 AND NOT r OR v>0 AND
     r THEN LET l=x: GOTO 320
350 IF v>0 AND NOT r OR v<0 AND
     r THEN LET h=x: GOTO 320
360 LET x=INT (x*2e8)/2e8
370 PRINT AT 2,0;"x=";x,#0; AT
    0,0;"Press any key",,"(P to
     Print)",: BEEP .1,28: BEEP
     .1,32: PAUSE 1: PAUSE 0: I
    F INKEY$="p" OR INKEY$="P"
    THEN LPRINT e$,"x=";x''
380 RUN 110
9999 SAVE d1"SOLVEX" LINE 10
```

'Dostest' and 'Drivetest' are short machine code routines for determining the current PLUS D DOS (i.e. BetaDOS or G+DOS) and the current drive. The Basic programs to POKE them in also include a built-in test at line 1000. Note also, that neither routine is compatible with UniDOS or the DiSCiPLE. Here they are - Get typing...

```
 10 REM PLUS D G+DOS/BETADOS TE
    ST
 20 REM (PD) By Miles Kinloch
 30 REM
 40 REM 20 bytes relocatable co
    de. Call with LET x=USR <st
    art>. x will be 0 for G+DOS
     and 1 for Betados. (RUN 10
    00 to test.)
 50 CLEAR 39999
 60 FOR a=40000 TO 40019
 70 READ d: POKE a,d: NEXT a
 80 DATA 219,231,58,172,48,1,0,
    0,254,68,40,4,254,205,32,1,
    12,211,231,201
 90 PRINT "PRESS ANY KEY TO SAV
    E CODE.": PAUSE 0: SAVE d1"
    WHICHDOS"CODE 40000,20
100 CLS : STOP
1000 REM Test
1010 CLS : PRINT "DOS INSTALLED:
     ";"BETADOS" AND USR 40000;
    "G+DOS" AND NOT USR 40000

 10 REM PLUS D LAST DRIVE NO. T
    EST
 20 REM (PD) By Miles Kinloch
 30 REM
 40 REM For PLUS D/Betados/G+DO
    S only. (Not for Unidos or
    Disciple.) Call with LET x=
    USR <start>. x will be the
    drive last used. (RUN 1000
    to test.)
 50 CLEAR 39999
 60 FOR a=40000 TO 40014
 70 READ d: POKE a,d: NEXT a
 80 DATA 219,231,58,218,61,1,1,
    0,31,56,1,12,211,231,201
 90 PRINT "PRESS ANY KEY TO SAV
    E CODE.": PAUSE 0: SAVE d1"
    WHICHDRIVE"CODE 40000,15
100 CLS : STOP
1000 REM Test
1010 CLS : PRINT "CURRENT DRIVE:
     ";USR 40000
```

Readers of last month's column will remember that George Siougas of Thessaloniki, Greece, had a little gripe because I had promised a program by Miles to fix all the bugs in BetaDOS and G+DOS. Well, Mr Siougas, you'll be glad to know that a further disc to end all discs crunched onto the dormat, heavy with documentation only yesterday. There's just a little problem, it will indeed take more that one month to deal with, otherwise the whole column will be devoted to this topic. However, we'll make a start on it next month. How's that.

Once again, thanks to all for the contributions. Please keep all your snippets coming to me; without them I can't put a column together. Please send them to:-

John Wase,
Green Leys Cottage,
Bishampton,
Pershore,
Worcs,
WR10 2LX.

See you next month.

The GERMAN Connection

A Review By:- Carol Brooksbank.

The German software house SINTECH sent ***FORMAT*** an interesting collection of Spectrum programs recently. There were several games, but the ones which caught my eye were an Assembler/Editor called *Prometheus*, an artwork colouring program called *Color Draw*, and *SQ-Tracker* - a music program for the 128K Spectrum.

All of these programs were originally sent to ***FORMAT*** on tape, but we asked for disc conversions, because it seems unlikely that many of our readers would be interested in tape only programs in this day and age. Disc copies duly arrived. The art and music programs were fine, supporting disc/tape storage at all levels, but although *Prometheus* itself can be loaded from disc, it can still only use tape to save/load source code files or object code. It is a great pity, because it looks a very good editor/assembler, but I doubt whether anyone would be willing to write their machine code with a package that requires them to use tape storage. If ever we receive a version which fully supports disc usage, I will review it, but in the meantime, I am turning to the other programs.

COLOR DRAW is an interesting and unusual program. It is not an art package as we usually expect them to be. It does not draw lines, circles etc. It is concerned only with colouring artwork whose pixel pattern has been produced already, using something like The Artist II or Art Studio. (You could draw a picture pixel by pixel with this program, but if you want circles or lettering, for instance, it would be a very tedious business.)

"What's the point?", I hear you ask - you can colour pictures with the mainstream art packages anyway. The difference is that this package uses attribute cells of 8 x 1 pixels, so it is possible to use all the 16 Spectrum colours in one normal 8 x 8 cell, instead of the two colours Uncle Clive intended. This gives you the same colour resolution as Mode 2 on the SAM.

Your picture can only occupy about half the screen width but you can position it anywhere, and it can be any height up to the full depth of the screen. If you have designed a picture with an art package, and it uses the whole screen, you will only be able to grab a portion half the width of the screen to colour with this program, but again, it can be from anywhere in the screen, and can be smaller than the half width or full height.

You can have three pictures in memory at once. You can work on them independently, or you can copy bits and pieces from one to the other by grabbing small areas into a window, whose size and position can be changed, and then placing as many copies of the window as you like, wherever you want them, on any or all of the three screens.

You can select windows to clear, flip (in any direction), or roll the pixels without the attributes. Pixel editing is done on an enlarged screen, and the cursor can set, reset, or toggle pixels. The border can be set to indicate which colour is

below the cursor, or this feature can be switched off if you don't like it.

There is a light/dark grid which can be switched on or off as it can be in most art packages. Surprisingly, the grid squares are 8 by 8 pixels, so each grid square actually covers 8 horizontal attribute cells. When you remove this grid, it does not, as it would in many art packages, remove the bright cells that you have set as part of your artwork. You have to remember, though, to switch it off before using a window operation, because the window will treat the grid bright 1/bright 0 cells as though they are part of your artwork, and thereafter removing the grid will not remove its pattern from the window areas.

The single pixel deep attribute cells make colouring pictures much easier than it normally is in the Spectrum. You no longer have to put your red rose in one 8 x 8 cell, its black stalk in another and its green leaf in a third, if they are all against a blue background. You are not completely set free from cell restrictions, of course - you can still only have 2 colours and bright on or off in one cell, but it is a whole lot easier when the cell depth is only one pixel than it is when it is eight.

Save/load is very versatile. You can save just the pixel information as a normal 6912-byte screen file, which can be loaded into any other art package if you want to work on the shapes. The attributes can be saved separately, so that when you load back your amended screen, you have not lost the colour work you have already done. The picture can be saved as a whole, so you can load it back into *Color Draw* for more work. You can save the picture complete with a machine code routine which will enable you to use the picture in your own programs, independent of *Color Draw*. Or, since the machine code routine only needs to be present once in your own program, you can save the picture without the routine, but in a form which will let the routine display it. Storing more than one picture for the routine to drive is a little complicated, but the method is explained, in rather broken English, in the manual.

Don't expect this program to let you draw sophisticated shapes unless you are very good at drawing pixel by pixel. But if you want more versatile colouring than the Spectrum normally allows, this program, used to colour artwork produced with a conventional art package, gives you the means.

SQ-TRACKER allows you to write 3-channel music on the 128K Spectrum. I have tested it with the PLUS D/ Spectrum +2. I cannot guarantee that it will work with the +2A or the +3. Again, I believe it is distributed on tape, but the copy we had for testing was on a 3½" disc. The save/load routines are in Basic, and you need to alter the syntax to suit your setup, and re-save the Basic.

Those Spectrum owners who know the SAM program E-Tracker will find themselves on familiar ground. The method of working is virtually identical in both programs, and I suspect that the same Eastern European programmer is behind both of them.

For those who don't know E-Tracker , Fig.1 (on the next page) shows the main working screen. The box at the top left is the main menu, and options are selected by moving the cursor to the required box and pressing the space bar or ENTER, depending on the operation. To the right of that are three visual channel indicators, which move up and down while the music is playing to indicate the volume from each channel. I took the snapshot for this illustration while the music was playing, so all three channels were at full volume. The two left ones

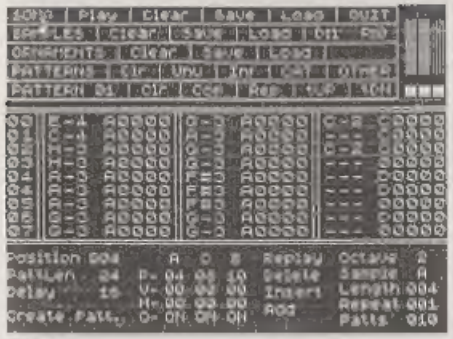


Fig.1

were playing tones, the right one looks different because it was playing a noise - a drum effect. The little white 'note' lying across the top two left hand options is displayed instead of the cursor while the music is playing, and the box below the menu scrolls as the music plays, the actual chord sounding being the one in the middle line of the display. (The 5th line down).

This box is the one where you enter your music, with one box per channel. A whole piece of music is known as a 'song', which is made up of 'positions'. At each position a 'pattern' - a predefined group of notes - is played. To write music, you create patterns. Each pattern is given a length in notes, and you enter the notes in each chord into the lines of the box. A section of the keyboard represents the notes in an octave, 'white notes' on the bottom line of the keyboard and 'black notes' on the line above. You can change octaves as necessary. The E-4 in the top line, channel A box, shows note E in ocatve 4. The next five digits contain the information about the instrument (known as a sample in this program), ornaments and various commands which let you do things like using glissando effects or changing channal volumes, among others.

The patterns are assigned to various positions in a song. If the same sequence of notes is used in several places in a piece, you have only to write its pattern once, and you can assign that pattern to however many positions you like.

The menu below the pattern display is the area where you set up the positions and the patterns to be played in each, create new patterns, change channel volume globally, transpose, switch channels on and off, specify the speed etc.

I have to say that, even though I already know Sam's E-Tracker, I found this a very difficult program to get to grips with. If I hadn't known E-Tracker I suspect I should never have got the hang of it. The handbook is one of the most deeply unhelpful documents I have ever come across. It has been translated into English by someone with a quaint grasp of the language, and consequently its instructions leave you totally bewildered. I simply blundered around the program, from time to time stumbling on something and saying to myself "O that is what the handbook meant." It took me a day and a half to program the melody line from one verse of the National Anthem. By then, I had begun to discover how things work, and it took me only about an hour to add the harmony and percussion lines, including defining a drum sound with the sample editor.

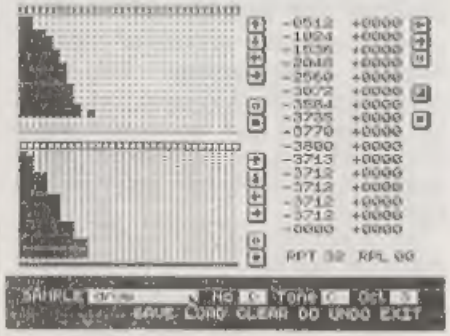


Fig.2

Fig.2 shows the sample editor screen. The top half is for tone sounds, and the bottom for noise. This drum has no tone, so only the parameters in the bottom grid are used. The black line below the noise grid shows this is in operation in this instrument. There is no corresponding black line under the tone grid because the tone is switched off. You can combine tone and noise, change the attack and declination of the sound, and specify the volume at each point in the sound. You can have up to 26 different samples in use in one song. Instrument sounds can be further modified by using ornaments, and there is a similar ornament editor.

You are supposed to be able to compile your music for stand-alone use, and link several compiled files together to make one larger piece of music, but Sintech did not see fit to trust us with the complete program for review, so I have no idea whether these features work. Publishers really cannot expect a magazine to assess a program properly if they are so paranoid about piracy that they will not submit the whole program. All I can say about it is that the part they sent seems to work, so we must hope the rest does. There is no doubt that this program is potentially the best music program around for the Spectrum. It allows the user to make full use of the AY chip's potential. But it desperately needs a proper handbook, written in coherent English, which explains fully how everything works. (I suspect that one of the problems is that the original was a bit sketchy and left a lot to the user's powers of deduction even before it was translated.)

But if you like making music on your Spectrum, and have a lot of patience, you will probably like this program. It is not so easy to use as *Music Maestro*, but it is far more sophisticated. It allows you to enter notes in all three channels at once, and you have complete control over sounds and instruments. If Sintech can only come up with a proper manual, this program could be a winner.

I'm sorry that I can't quote prices for you but Sintech did not include them in any of the paperwork they sent. Let us hope they soon appoint a British distributor that can handle these products properly.

SHOW PREVIEW

For those of you who have not been reading the editorials in ***FORMAT***, the latest Gloucester Spectrum & Sam Show will be held on Saturday 20th April 1996. The show, our sixth by the way, is held at our usual venue on the outskirts of Gloucester at the Quedgeley Village Hall, Bristol Road, Quedgeley, Gloucester. (See the map and directions printed on pages 21/22).

The show opens to the public at 10:30am and runs until 4:30pm. Entry is just £2 per person, with up to two under 14s free if accompanied by an adult.

Make sure you bring lots of money with you or at least your cheque book and pen.

FOOD & DRINK

The most important service at any show. There will be plenty of refreshments and snacks available inside the show, at very cheap prices I will add - not the rip-off prices you find at other shows. There is also a good pub right next door that sells midday meals. The area is also well supplied with other restaurants and Gloucester's main Tesco is just over the road.

BRING AND BUY

The Bring and Buy stand is without doubt one of the most crowded stands during the day, giving people the opportunity both to rid themselves of some of the surplus items they have gathered over the years and of course to find that one item you have always hankered after.

If you are selling items then please remember to make sure everything is fully working, complete, and has its instructions or manual. If possible put a small label on each item giving your name and the price you are asking. The Bring and Buy table, in the back room, is not constantly manned, although Derek Morgan does try to keep an eye on things for us if he is not too busy with his SAM PD stand. However, we leave it up to buyer and seller to get together and do the business. Each show sees many hundreds of items change hands and I'm sure there will be even more this time, but you will understand that the organizers cannot be responsible for items left for sale, nor can we be responsible for items you purchase. Our recommendation to buyers is to make sure you get the sellers address just in case.

STAND BOOKINGS

If anyone wants a stand at this show, and has not already had a booking form from us, then ring Jenny on 01452-412572 right away and we will see if we can fit you in.

HOTELS

If you want to make a weekend of your visit to Gloucester then ring the Tourist Information Centre on 01452 421188 or write to them at St. Michael's Tower, The Cross, Gloucester, GL1 1PD. They will send you a list of local hotels in your price range.

See You At The Show

WHO'S THERE

The question everyone asks when we tell them about a show is "Who will be there?". Well, I think it is safe to say that nearly all the companies that count in the SAM and Spectrum world will be there and I am sorry there is not room to mention everyone in this write-up.

FORMAT, yes we will be in our usual spot, one advantage of organizing our own shows, with all our range and those of REVELATION, WEST COAST, BETASOFT and EMIGMA.

SAM PD I've already mentioned that Derek Morgan will be in his usual place in the back room. As well as the PD and commercial software he has he will also be demonstrating the Video Digitiser for SAM (and, maybe, taking orders).

DEMOS & HELP Carol Brooksbank will be there with both Spectrum and SAM set up and ready to give help and advice to any who feel a need for it. Anyone wishing to demonstrate something to other people will be very welcome - we will try to get you some time on one of them if at all possible

S.D.SOFTWARE Got your SAM Hard Drive yet? Well if you are behind the times then this is the ideal opportunity to take the 'giant leap for SAMkind' and attach a hard disc to your machine.

FRED SOFTWARE There will be a new version of *SAM C* and *SAM Vision* (a new set of extra C libraries) available at the show, together with Fred's wide range of SAM software and of course the famous FRED disczine

HALL VIDEO PRODUCTS Will be attending the show for the first time selling their acclaimed range of graphic display and video titling products for the Spectrum. You've heard of their software many times in ***FORMAT***, now see it in action.

FLEXIBASE will be selling their wide range of products including their new *Highway Code Test* for PC and Spectrum.

STEVE'S SOFTWARE will be there too, with samples of the ever growing *Clip Art* collection and with all his other SAM products.

SATURN SOFTWARE will have their *Icon Discs* (1 & 2) for DRiVER at the show as well as *Easydisc* file handler and the *Network Sigma* disc magazine.

WOODPECKER DISCS Quality discs at affordable prices. If John Wase uses them they must be good

There will be other stands of course, it is simply that we have to go to press far too early to get a full list in and there just is not enough space. What you can be assured of is bargains galore and lots of interesting people to talk too

Make sure you get there on Saturday the 20th *OR YOU WILL REALLY BE MISSING OUT.*

GETTING THERE

Gloucester is very easy to reach from most parts of the country and you will find full directions below and a map on the next page.

By Car If you are travelling north on the M5 then come off at junction 12 and follow signs for Gloucester. A few hundred yards from the motorway slip-road you will come to a roundabout with a garage on your left, take the second exit and follow the A38 towards Gloucester for a short distance. Now take the turning on the left, marked B4008 with signs for Quedgeley and the Severn Vale Shopping Centre. Go straight over at the next roundabout (this is the one at the bottom of the enlarged map) and then just before the next roundabout the hall is on the left, set back a bit from the road and often slightly hidden by the mobile fruit & veg stall that uses the forecourt.

For those coming south there are two choices. Junction 12 is not available southbound, so it is easier to continue to exit 13 and then turn north onto the A38 - this only adds about 5 miles to the journey and avoids the traffic around Gloucester. The alternative is to exit at junction 11 (the A40/Cheltenham exit) and follow signs for Gloucester, follow the ring-road around you eventually get signs for M5 South - until you reach the roundabout marked at the top of the enlarged map. This has the local British Telecom offices on the left, follow signs for Severn Vale Shopping Centre (see above for more details).

Anyone not using the motorway should be able to work things out from their own road atlas given the maps shown here

Warning, anyone with new maps may be tempted to use junction 11a, don't, it is a nightmare and even locals don't know where it goes to.

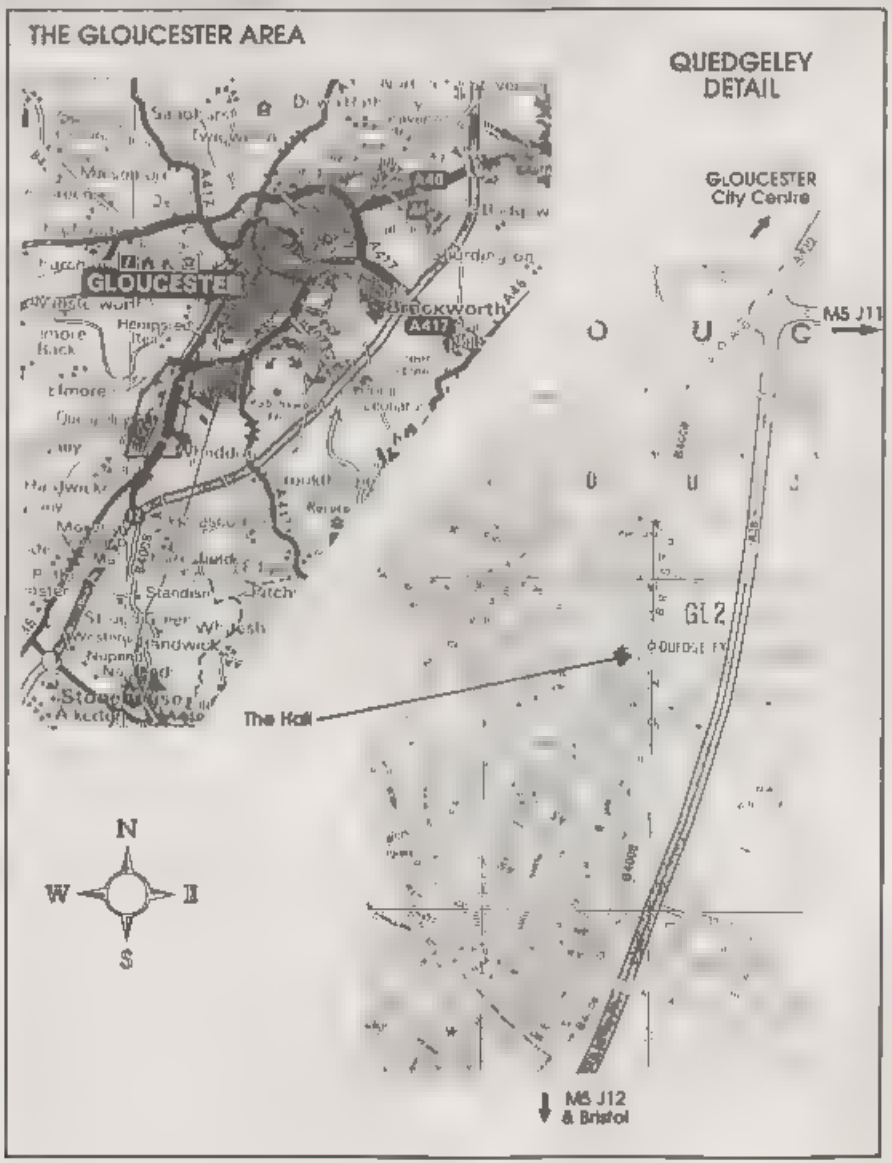
Parking: Please use the free parking provided, just round the corner, in front of the Tesco Super-store. Remember to lock any valuables safely away out of sight - being a busy car-park your car should be quite safe, but it is better not to take chances by putting temptation in front of thieves.

By Rail or Coach: Gloucester is well served by Rail and Coach services. Buses to Quedgeley run about every 15 minutes from the Bus/Coach station (which is almost opposite the entrance to the Train station) ask at the travel office. On the bus ask the driver for Tesco Superstore - he will know where you need to get off, the journey takes around 12 minutes

Other Attractions: There are plenty of shops in the city centre so why not bring the family and then sneak off to the show while they enjoy themselves in sunny Gloucester. There is also the National Waterways Museum at Gloucester Docks, our famous Cathedral and lots of other historic and interesting places to visit.

Just down the A38 there is the Slimbridge Wild Fowl Sanctuary, a place everyone should visit.

THE MAPS



The HELP PAGE

Edited By:- Ray Bray.

Having survived the icy blasts and blizzards of February and recovered from a recent bout of 'flu I once again find myself at the keyboard, surrounded by a pile of reference books and scribbled notes, trying to compose useful answers to your queries. The first question this month comes from Kevin Bennett who lives at Farmoor, Oxford (a delightful part of the country!). Kevin's problem is that he has recently replaced his trusty old Epson LQ400 printer with a shiny new Epson Stylus 820 inkjet printer and, although he is delighted with the new machine, he finds that when he uses it with the PCG DTP pack it will only print in draft from Typeliner. He uses a Spectrum 128, DISCiPLE and Uni-Dos.

Unfortunately it is a fact of life that all Epson printers do not support all of the standard Epson control codes, and I suspect that the more sophisticated the new printers become, the less compatible they are likely to be with much of the software written in the 70/80's. A complicating factor with Typeliner is that the printer driver is all part of the machine code program so it is not so simple to alter the control codes, even if you have them. In this instance the printer handbook is less than helpful in respect of the graphics codes which are needed to print from Typeliner, so it is a case of going back to the manufacturer to ask for the necessary details, and this Kevin is doing. In the meantime I can give a few details on where in the program the printer control is effected so that when the codes come to hand they can be incorporated and, at the same time, if anyone has a similar problem with another printer they will be able to take the necessary action.

Typeliner prints in the graphics mode and uses the single density graphics command CHR$(27); CHR$(75); n1; n2 to produce the draft printout and the double density command CHR$(27); CHR$(76), n1; n2 to produce NLQ print. The values n1 and n2 are the two byte form of the total number of data bytes to print. The subroutine which sends this information to the printer is 11 bytes long and is located in the main Typeliner program at address 28506 and in the Typeliner! program at address 28628. This routine deals with both draft and NLQ modes, the mode being set by the value held in the C register on entering the sub-routine. The value for the C register is set at two locations in the program -

	Typeliner	Typeliner!
Draft value 75 address	28468	28590
NLQ value 76 address	28460	28582

If the problem is caused by the printer using a different code to one of the two shown above, then it is a simple matter to poke the correct code into the locations shown above. However, if the command is completely different, then the sub-routine will have to be amended This will be difficult if the new routine requires more than the existing number of instructions and will entail carrying out a call to the new routine located elsewhere in memory. The addresses are the same for both the Spectrum and SAM versions of Typeliner

One final thought on this topic. In the case of the Stylus 820 printer and other

ink printers, if the problem is in fact being caused by the lack of the correct control codes when operating in the Epson mode, the printer will almost certainly be equipped with the facility to switch to the IBM Proprinter mode which uses the standard Epson codes for this type of graphics operation So, before you attempt changing the Typeliner program, just try switching to the IBM mode to see if this does the trick.

Continuing with the DTP theme our next letter, from Paul Bloomer of Churchdown, Gloucester, asks for help with loading SAM Flash! files into the PCG Headliner graphic designer. He has tried everything he could think of but to no avail - can we help him? Help is at hand Paul. As you surmise, because the DTP is based on the Spectrum, Headliner will only accept files in the Mode 1 screen format, therefore Flash! screens in any other mode must be converted to Mode 1 (using Flash!), before they can be transferred. Not only that, they also have to be reduced in size to 6912 bytes and relocated at address 30000. Mark Sturdy covered this problem in his useful DTP Tips article in the December 95 issue of ***FORMAT*** so I won't cover all the ground again. Suffice to say that, to achieve this, the screen code has to be loaded at 30000 (on a clear SAM) and then re-saved as "name" CODE 30000,6912. The new file can then be loaded into Headliner without trouble

Paul also has a problem with DRiVER which occurs in the floppy disc windows where, instead of the individual icons, there are identical white rectangles displayed above each name. The icons are displayed perfectly on the DRiVER Desktop and in RAMdisc windows. As far as he can remember the problem arose when he erased some unnecessary files from the disc in order to fit some other utilities in, but no other changes were made. He did try again with another disc, which was alright until the disc was full and then the icons went again. From what you say this fault appears to be linked to using a full disc, however you don't say whether it occurs only when some disc operation has been undertaken, and whether it happens with a standard disc of 80 files or only when the directory has been extended using MasterDOS. Unfortunately I can't give an answer to your problem, all I can do is appeal to anyone who can help to write in and give us the benefit of their knowledge.

As a final shot Paul says it would be useful if someone could come up with a way of printing from Cardfile on DRiVER Extras other than having to copy it to Notepad and print it from there. I think we have had that comment before. Maybe one of our readers will come up with a fix?

Our next question concerns Specmaker. T.McKay of London finds that when he uses BetaBasic with Specmaker, the printer refuses to operate, although without BB loaded the printer works normally. With LPRINT and LLIST an error 'q5,o.1' is reported and when using COPY the printer just linefeeds without any printout. His Spectrum setup is +3 with Fixer and PLUS D He cannot remember whether he saved the specrom from a Spectrum + or from the +3. This problem hasn't been raised before in ***FORMAT*** so we are back to first principles. Firstly, regardless of which specrom is being used, the fact that the printer works normally without BB means that the printer channel is set correctly when Specmaker is loaded initially. Now I am not aware whether BB uses any special printer routines and whether it resets the printer channel, but the latter is a likely place to look for the problem. The printer channel record comprises 5 bytes starting at address 23749 Bytes 1 & 2 is the address of the printer routine, bytes 3 & 4 is the address of the error routine

and byte 5 is the P channel identifier. The five bytes are normally set to the following values:-

Configuration	1	2	3	4	5
Spectrum 48K	244	9	196	21	80
Spectrum 128K	52	91	47	91	80
Spectrum + PLUS D	8	0	8	0	80
Specmaker 48K ROM	32	57	196	21	80
Specmaker 128K ROM	32	57	47	91	80

If you have used the +3 as the specrom the values might be different so I suggest you load Specmaker and PEEK the values without BB loaded and make a note of them. Then load BB and see if the values have been altered and, if they have, POKE back the original values and test whether the printer works properly

The next question comes from Michael Williams of West Ealing, London, who has run into a problem with his SAM when using the MasterBasic expression SVAL$. He wished to convert integer numbers into 2-character strings, using the MasterBasic expression SVAL$, and store them in a string array. No problem so far but, having done that, he then wished to search the string array using INARRAY(a$,b$) looking for input numbers which have been also converted to strings using SVAL$. Sounds simple enough but it doesn't work! When the search string contains a byte value of 35, the INARRAY routine assumes that 35 is the hash character '#' meaning 'match any character', and the search stops at the first entry in the array Michael asks if there is any way to temporarily switch off the 'match anything' function as just altering the setting of SVAR 5 will only shift the problem elsewhere.

It is a fact that INARRAY and INSTR were intended to deal with 'proper' strings which consist of character bytes only. As you have found out, if it were not for the 'match any character' facility, the routines would be able to cope with all types of strings. Fortunately, in the case of INARRAY, it is possible to bypass the 'match any character' routine by performing a POKE 478489,0,0 after the BOOT has been performed. This POKE assumes that MasterBasic has been loaded to page 28, the normal position.

If the poke doesn't work, find out which page has been assigned to MasterBasic by examining the Page Allocation Table (address 20736 to 20767), which holds one byte per 16K RAM page representing the pages which have been allocated a specific use. The page which holds the MasterBasic routines will be marked with byte 48. If you find this is not page 28, then the POKE address must be changed. The revised POKE address is given by the start address of the page + 3352. To double-check this address, PRINT PEEK from 3 bytes before the new address to one byte after the address which should then display the following byte string 217,185,217,40,243. The bytes which the POKE sets to zero are 40 and 243.

Michael had a second problem which everyone must dread. A disc containing an often-used and long program suddenly developed a 'Track 0' fault! Fortunately by using the SAM DICE utility he was able to locate the most recent version of the program on the disc and, using the READ AT command, he managed to recover it as a CODE file on another disc. The problem then was how to convert the CODE file back to a BASIC file? Although Michael has now managed to recover the file, I thought that the answer to this dilemma might be of interest to everyone.

There are three ways of going about this task. Firstly you could devise a program which would convert the code to tokens and reconstruct the Basic listing using KEYIN a$ This would be a mighty task to undertake and should be avoided if at all possible. However, writing such a utility would be a nice project for someone with time on their hands

Secondly, the required system program variables on start-up could be calculated from the length of the program and set accordingly, space could then be made and the code of the Basic portion of program loaded to address 23765. This requires a good understanding of how the system variables are calculated and needs a machine code routine to set the variables and make the necessary space available for the program.

Thirdly you could try and recover the program data held in the corrupt directory. The vital factor governing the success of this method is whether or not the directory entry for the program you are interested in has been corrupted along with others and, if so, how badly. If it is a complete write-off then you are back to methods one and two. However, this method should be attempted initially.

First, write-protect the corrupted disc to prevent further inadvertent damage. Next you should make a back-up copy, using READ AT and WRITE AT to copy every loadable sector, to use as a working disc. Having done that, it is then a case of 'back to the drawing board' and making use of the READ AT command to examine the directory sector-by-sector, with the aim of locating the damaged sectors and finding out whether the directory entry in which you are interested is intact. Assuming that the file entry is intact and not within a damaged sector (there are two entries per sector), then because you are only using a working copy of the original disc, the easiest way of dealing with any damaged sectors is to WRITE that sector back to the disc filled with zero bytes. If the first entry in the sector in which your entry resides is corrupted, then all that is needed is to set the first byte in the sector to zero and WRITE the sector back to the disc.

Having checked the sectors and zeroed or corrected them as required, your next step is to try and load the file using SAMDOS instead of MasterDOS. The reason for this is that when MasterDOS comes across an empty sector in the directory it gives up searching any further. SAMDOS, being a simple soul, goes on plodding through all 40 sectors of the directory in the hope of finding your file! Having loaded the file, change to a newly formatted disc and SAVE the program, then switch-off and restart the computer and check that the program loads correctly again. If there are no further files which you wish to salvage, reformat the working disc before using it further.

If by some stroke of misfortune the directory entry for the file itself is corrupted, but you have managed to reclaim a code file of the Basic program, then most items of data can be reinstated without too much problem:-

Byte	
0	For a Basic file this should be set at 16
1-10	The filename (remember any trailing spaces).
11	The hi-byte of number of sectors used. If you have reclaimed the program code you can calculate this.
12	The lo-byte of the number of sectors used (see above).
13	Track number for the start of file. Remarks as above.
14	Sector number of start of file. Remarks as above.
15-209	Sector address map. If you have reclaimed the file successfully then it is possible to reconstruct the address map but this task is not one for the faint hearted! It comprises of setting the bits of all 195 bytes (representing the 1560 sectors available for storage), to 0 or 1 depending on which sectors have been used for the file
210-219	As far as I am aware these are not used for SAM
220	FLAGS. Set to 0 for Basic files.
221-223	The program length excluding the variables and the header bytes. This can be found from inspecting the reclaimed file.
224-226	The program length plus the numeric variables. Remarks as above.
227-229	The program length including the numeric variables plus the gap before the string and array variables. This can be set to the length above, plus 256.
230-235	Not used
236	Start page number. Obtained from byte 8 of the file header. Normally 0.
237-238	Page offset. Obtained from bytes 3 & 4 of header.
239	Number of pages in length, from byte 7 of header
240-241	MOD length, from bytes 1 and 2 of header.
242-244	Execution line number. Can set to 0,255,255.
245-255	Spare.

Having repaired the directory entry, WRITE the sector back to the working disc, load the file and proceed as described in the previous paragraph. If after attempting to repair the directory you still can't recover the file, send me a copy of the code version of the program you have recovered (on a new disc) and I will try and recover it for you using method two mentioned above.

That's all we have for this month. Please keep sending your problems, answers to the following addresses:-

Anything SAM or General Purpose,-
Ray Bray (*FORMAT* Help Page),
Spring Cottage, Bourne Close,
Porton, Salisbury, Wilts, SP4 0LL.

Anything +3, CP/M,-
Mike Atkins (*FORMAT* Help Page),
70, Rudgwick Drive,
Bury, Lancashire, BL8 1YE.

Please remember that if you want any discs/printouts etc returned then you must include an SAE.

WANTED Manual for Brother HR25 printer. Write to David Studholme, 23, Glasfryn, Henllan, Clwyd, LL16 5AQ.

FOR SALE SAM Elite, single drive, SAM Mouse, SC_Word Pro, SC_Filer, SAM C, SAMPaint, Games Master and many more. All manuals. All in first class condition, £200. Please call Keith Tinsley on 0121 552 0549 after 6:30pm.

WANTED Spectrum 128 (not +2) Complete if possible but keyboard fault not too important. Please contact me, Andy Hayward at 15 Ave.Roi. Baudouin, 6600 Bastogne, Belgium. Tel: 010 32 61 21 19 26. Can collect from Norwich area or have it sent there.

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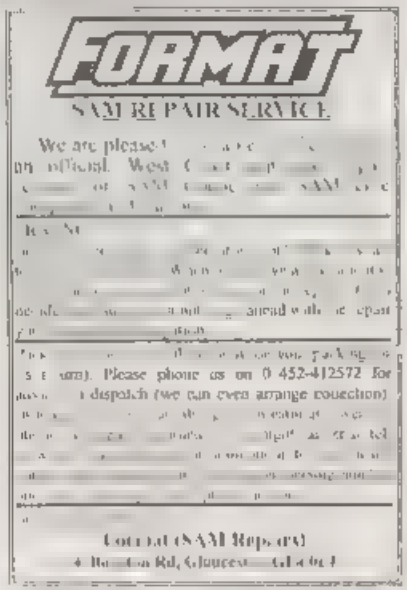


PLAY IT AGAIN SAM

By:- Antony Drage

Before I bought SAM I was the owner of a Spectrum 128K. There was a particular feature of this machine that I enjoyed using. This was the PLAY command which made it possible, with relative ease, to write three channel music on the Spectrum. Never really grasping how to play the piano convincingly I enjoyed transcribing sheet music onto the Spectrum so that I could sit back and listen to how the tune should sound. The great day then came when I upgraded to a SAM Coupé, which offered the SOUND command allowing "direct access to the sound chip" Unfortunately no one mentioned that it was difficult to use. I therefore decided that SAM needed a Basic command similar to the Spectrum's, and the program in this article is the result.

I have based the command on the Spectrum PLAY command, but no longer being an owner of the Spectrum, much of it is based on what I can remember, so the command is fairly similar, any differences being due to my poor memory. I would also like to add that the inspiration for the program is from the 'play' demo program enclosed on Dr Andy Wrights MasterBasic disc.

The program is built around three procedures which add three new BASIC commands. The first is RSOUND which resets the sound chip ready for use. It also sets up a number of variables which will be used by the main PLAY procedure. When writing programs it is important to use RSOUND before the first PLAY command or nothing works. It only needs to be used once, and any number of PLAY commands can follow.

The second command is TEMPO x, where 'x' is any number. This command sets the tempo which governs the speed the tune will be played. The higher the number, the longer each note will last, and vice versa for lower numbers. If the command is not used then the default is 4 as set by RSOUND

Finally the main command; PLAY x1$, x2$,x3$,x4$,x5$,x6$. The command itself does not generate music, but instead returns a string called 'play$' which can then be BLITZed using the command; BLITZ SOUND play$.

Similar to the Spectrum, the command has special codes which allow the octave, volume, and note duration to be changed. The commands are as follows -

Ox - this changes the octave number and 'x' can be between 0 and 7. Middle C is found in octave 3, but PLEASE NOTE, on SAM each octave begins with B, unlike the normal C. Therefore the octave runs as follows 'B C D E F G A' Remember to bear this in mind. The following example plays the note C in each octave:-

```
RSOUND: PLAY "O0CO1CO2CO3CO4CO5C
O6CO7C": BLITZ SOUND play$
```

Nx - this changes the note duration and 'x' can be between 0 and 9. Table 1 details the note numbers and the musical notation equivalent. For example 'N4' means that the following notes will be played as crochets. The following example plays each note for a different duration:-

```
RSOUND: PLAY "O3N0HN1CN2DN3EN4FN
5GN6AN7GN8FN9E": BLITZ SOUND pla
y$
```

Vx - this changes the volume level for the particular channel and 'x' can be between 0 and 9, with 9 being the loudest. The command allows the volume level for each channel to be set at different levels. For example:-

```
RSOUND : PLAY "O3N4V0CV3CV5CV7CV
9C","O4N4V9CV7CV5CV3CV0C": BLITZ
 SOUND play$
```

This plays Middle C and the C one octave above at different volume levels.

The notes are entered as letters between A and G depending which note you require. To signify a sharp the '|' character is used, for example F sharp is 'F|'. Flats are not supported, but can be played by converting them into the sharp of the note below. Therefore G flat becomes F sharp (same note different name). The following plays a scale starting from Middle C:-

```
RSOUND : PLAY "O3N4CC|DD|1EFF|GG
|AA1O4B": BLITZ SOUND play$
```

A rest is signified by the '&' character and will last as long as the current note duration. Again see Table 1 for the 'rest' equivalents. The following example plays Middle C followed by a rest whilst the C an octave above is played:-

```
RSOUND : PLAY "O3N4C&C&C","O4N4&
C&C": BLITZ SOUND play$
```

Since compiling the tune can take a little while, it is worth saving play$ and loading it into your program for BLITZing, instead of compiling it every time. OK, here is the PLAY program:-

Note No.	Note Symbo.	Name	Rest Symbol
0	𝅘𝅥𝅯	Semiquaver	𝄿
1	𝅘𝅥𝅯♯		
2	𝅘𝅥𝅯	Quaver	𝄾
3	𝅘𝅥𝅯♯		
4	𝅘𝅥	Crochet	𝄽
5	𝅘𝅥♯		
6	𝅗𝅥	Minim	𝄼
7	𝅗𝅥♯		
8	𝅝	Semibreve	𝄻
9	𝅝.		

Table 1.

```
1000 REM PLAY, RSOUND & TEMPO
1010 REM by Antony Drage
1020 REM Version 3 October 1995
1040 :
1050 DEF PROC RSOUND
1060 SOUND CLEAR 2048
1070 RESTORE 1270
1080 DIM freq(13),duration(10),
     octave(6),vol(10),chandur(
     6)
1090 LET tpo=4
1100 FOR n=1 TO 13
1110 READ freq(n)
1120 NEXT n
1130 FOR n=1 TO 10
1140 READ duration(n)
1150 NEXT n
1160 FOR n=0 TO 31
1170 SOUND n,0
1180 NEXT n
1190 FOR n=1 TO 6
1200 LET octave(n)=3,chandur(n)
     =8
1210 NEXT n
1220 FOR n=1 TO 10
1230 READ vol(n)
1240 NEXT n
1250 SOUND 0,255;1,255;2,255;3,
     255;4,255;5,255: REM Set a
     mp to max
1260 SOUND &10,51;&11,51;&12,51
     : REM Set all channels to
     Octave 3
1270 DATA 5,33,60,85,109,132,15
     3,173,192,210,227,243,0
1280 DATA 2,3,4,6,8,12,16,24,32
     ,48
```

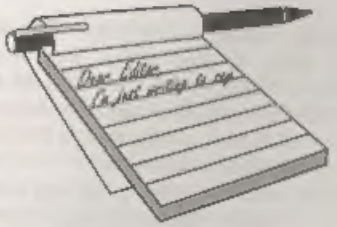
```
1290 DATA 0,17,51,85,119,153,18
     7,221,238,255
1300 END PROC
1310 :
1320 DEF PROC TEMPO n
1330 LET tpo=n
1340 END PROC
1350 :
1360 DEF PROC PLAY DATA
1370 DIM note$(6,512),posi(6),c
     ount(6)
1380 LET chan=0,play$=""
1390 DO WHILE ITEM
1400 LET chan=chan+1
1410 READ t$
1420 LET note$(chan)=t$
1430 [illegible]
1440 :
1450 LET cs=(1 AND note$(1,1)<>
     " ")+(2 AND note$(2,1)<>"
     ")+(4 AND note$(3,1)<>" ")
     +(8 AND note$(4,1)<>" ")+(
     16 AND note$(5,1)<>" ")+(32
      AND note$(6,1)<>" ")
1460 LET pcs=cs,play$=CHR$ &1c+
     CHR$ 1+CHR$ &14+CHR$ cs
1470 .
[illegible]
1490 FOR n=1 TO chan
1500 LET t$=SHIFT$(note$(n,posi
     (n)+1),1)
1510 IF count(n)=0 THEN LET cou
     nt(n)=chandur(n),t$=SHIFT$
     (note$(n,posi(n)+1),1)
1520 IF t$="N" THEN LET chandur
     (n)=duration(VAL note$(n,p
     osi(n)+2)+1),posi(n)=posi(
     n)+2,count(n)=0: GOTO 1500
1530 IF t$="O" THEN LET octave(
     n)=VAL note$(n,posi(n)+2),
     v=INT ((n+1.5)/2),play$=pl
     ay$+CHR$ (&0f+v)+CHR$ (oct
     ave(v*2-1)+(octave(v*2)*16
     )),posi(n)=posi(n)+2,count
     (n)=0: GOTO 1500
1540 IF t$="V" THEN LET play$=p
     lay$+CHR$ (n-1)+CHR$ vol(V
     AL note$(n,posi(n)+2)+1),p
     osi(n)=posi(n)+2,count(n)=
     0: GOTO 1500
1550 IF t$<>" "
1560 IF note$(n,posi(n)+2)="!"
     THEN LET t$=SHIFT$(note$(n
     ,posi(n)+1 TO posi(n)+2),1
     )
1570 LET v=INSTR(" B C C!D D!E
     F F!G G!A A!& *,t$)/2
1580 REM PRINT t$; TAB 5;n; TAB
      9;octave(n); TAB 13;count
     (n); TAB 16;freq(v): REM P
     RINT note, channel, octave
     , AND count
1590 IF t$<>"&" THEN LET play$=
     play$+CHR$ (7+n)+CHR$ freq
     (v): ELSE LET play$=play$+
     CHR$ &14+CHR$ ((1 AND note
     $(1,posi(1)+1)<>" " AND no
     te$(1,posi(1)+1)<>"&")+(2
     AND note$(2,posi(2)+1)<>"
     " AND note$(2,posi(2)+1)<>
     "&")+(4 AND note$(3,posi(3
     )+1)<>" " AND note$(3,posi
     (3)+1)<>"&")+(8 AND note$(
     4,posi(4)+1)<>" " AND note
     $(4,posi(4)+1)<>"&")+(16 A
     ND note$(5,posi(5)+1)<>" "
      AND note$(5,posi(5)+1)<>"
     &")+(32 AND note$(6,posi(6
     )+1)<>" " AND note$(6,posi
     (6)+1)<>"&"))
1600 END IF
1610 LET count(n)=count(n)-1
1620 IF count(n)=0 THEN LET pos
     i(n)=posi(n)+LEN t$
1630 IF t$(1)=" " THEN LET cs=(
     1 AND note$(1,posi(1)+1)<>
     " ")+(2 AND note$(2,posi(2
     )+1)<>" ")+(4 AND note$(3,
     posi(3)+1)<>" ")+(8 AND no
     te$(4,posi(4)+1)<>" ")+(16
      AND note$(5,posi(5)+1)<>"
      ")+(32 AND note$(6,posi(6
     )+1)<>" ")
1640 NEXT n
1650 LET play$=play$+CHR$ 32+CH
     R$ tpo+CHR$ &14+CHR$ cs
[illegible] LET pcs=cs
1670 END IF
1680 LOOP UNTIL cs=0
1690 LET play$=play$+CHR$ &1c+C
     HR$ 0
1700 END PROC
```

Compared to the Spectrum command the SAM version does quite well (apart from being slower). However, there are a couple of things that are not implemented. These are 'wave forms' and also white noise generators, this is simply because I do not understand how to implement them on SAM at the moment.

As a demonstration of the command the following code plays Andrew Lloyd Webber's 'Memory'. Merge the lines into the PLAY program and give it a whirl -

```
10 REM MEMORY by Andrew Lloyd
   Webber
20 :
30 TEMPO 4
40 RSOUND
50 PLAY "N5O4DDN2DC!DEDBN5DDN
   2DC!DEN3DN0O3AO4n5BBN2BO3G
   AO4BO3AGN7F.N5F!N4F!N2A","
   O2N2DAO3F!F.O2AO3F!O2DAO3F
   !F!O2AO3F!O2BF!O3BBO2F!O3B
   O2BF!O3BBO2F!O3BO1GO2DO3BB
   O2DO3BO1GO2DO3BBO2DO3BO1F!
   O2C!F!F!C!F!O1F!AO2F!O3C!O
   2AF!","O2N7DDBBO1GGF!F!"
60 LET memory$=play$
70 PLAY "O3N5AN4EN2F!GAO4BC!"
   ,"O1N2EBO2EGO3BEO2EO3BEB",
   "O1N7EO2N6E"
80 LET memory$=memory$+play$
90 PLAY "O4N2DC!BO3N5AAN5F!N2
   D","O2N2BF!O3BDF!DO2BF!O3B
   O2BF!O3B","O2N7BN5BB"
100 LET memory$=memory$+play$
110 PLAY "O3N7D","O2N2DAF!AF!A
    ","O2N7D"
120 LET memory$=memory$+play$
130 PLAY "O4N5C!F!C!B","O3N5AO
    4C!O3AG","O3N5F!AF!E","O2N
    7F!G"
140 LET memory$=memory$+play$
150 PLAY "O4N5C!F!C!N2C!B","O3
    N5AO4C!O3AG","O3N5F!AF!E",
    "O2N7F!G"
160 LET memory$=memory$+play$
170 PLAY "O4N5C!F!F!N2F!N4E","
    O3N5AO4C!DN2DN4B","O3N5F!A
    AN2AN4G!","O2N7F!N5DE"
180 LET memory$=memory$+play$
190 PLAY "O4N5EN7E","O4N5C!N7C
    !","O3N5AN7A","O1N7A"
200 LET memory$=memory$+play$
210 BLITZ SOUND memory$
```

To replay the sound after it has compiled use GOTO 210. Remember that you can save the array 'memory$' and reload it in another program and play it whenever you want with the BLITZ SOUND command



YOUR LETTERS

Dear Editor,

SAM C. Why spend £25 on a book when for £5.35, including postage, you can get 'Learning To Program In C' from Bernard Babani Books, Grampians, Shepherds Bush Road, London, W6 7NF.

Just send a cheque and if you want the book by return of post enclose a peel-off self-addressed label.

Statements are introduced and explained with the help of simple examples, these, in some cases, may have to be amended to comply with SAM C's Compiler, which also applies to examples in other books - isn't that part of learning!

At the end of each chapter you are set a problem to do and (if like me you can't) the solution is given at the end of the book.

It deals with String and Numeric ARRAYS, Function Sub-programs etc.

To use FLOAT examples you will have to enter Ray Bray's 'C-MATHS' articles from ***FORMAT***.

I do not think any of our readers will be disappointed with this book.

Yours sincerely, Eric M.Day.

Thanks Eric, it is indeed a good, value for money book. ***Ed.***

Dear Editor,

I have been very interested in the letters written by Adrian Walker and Alan Harper. It set me wondering how it was that someone who had retired for several years and had not handled anything more complicated than a Paion programmable calculator could manage to understand Basic programming while others fail.

I first purchased a Spectrum 128k+2 in 1987 and just studied and practiced from the hand book. This hand book covered everything from unwrapping and setting up the Spectrum followed by how to operate the machine. This was followed by an introduction to Basic followed by a detailed description of the key functions including the graphic produced by combining key pressing. The end of the book gave details on how to connect Basic with examples to cover all functions. With this information I was able to produce simple and very workable programs, although the style of programming was very amateuriah.

When the SAM Coupé came into being I decided to purchase one as my Spectrum programs could still be used together with the quicker loading facilities of a disc drive. The Users' Manual, by Mel Croucher, was easy enough to follow as so many commands were the same as the Spectrum, but with many other commands like DEF PROC to eliminate the chore of continually looking for the GOTO Line number. The difficulty newcomers could meet is the lack of example programs in the manual. Those shown are short and to the point but lack the problem element, where the reader is set further examples for him to tackle as given in text books.

This could be one the failings of the manual that I received with the SAM. The lack of a challenge when learning Basic. The satisfaction of producing your own little program from the data that you have just read. The manual that I had with the machine in 1990 did not

have the ability to teach the complete computer idiot like myself. I do not know to what extent present day schools teach elementary computer programming, hence to what extent this is necessary.

I have found the SAM Coupé very useful for keeping records and throwing away paper. It is quick to reproduce bits of information from discs for the use or amusement of friends. The price of the software is very reasonable when compared with those advertised in the Press. The only item required is the magazine ***FORMAT*** to keep up to date and remind you of the functions and commands that you have not used, or have not been included in the manual.

I trust that this will give you some idea as to one retired persons introduction to computer programming.

Yours sincerely, John Thornborrow.

MGT did plan a beginners' book but of course that never got off the ground. The best 'Teach Yourself' book I've seen is the *30 Hour Basic* book from the National Extension College (originally produced in conjunction with the BBC). The Spectrum version, ISBN 0 86082 394 6, does not cover SAMs extra commands but is still an excellent starting point. ***Ed.***

Dear Editor,

Firstly I must congratulate you on your excellent work. As a reasonably new reader, I was amazed by the quality and number of things which could be written about our 'dead' machines, so give yourselves a big pat on the back.

Now, I was wondering if you could answer a couple of questions which I have.

I own a TIMEX 2040 thermal printer which is running out of paper. Could you please tell me if paper can still be obtained for such an old machine? The roll is 110mm wide, 48mm in diameter and has a maximum length of 25m.

I am probably one of the very few remaining Spectrum 128K +2A who doesn't own a disc drive but I am thinking of buying a PLUS D. Could you please give me information as to where I could get one from along with a 3½ inch disc drive and for how much?

Finally, could I just plug my little software house type thing, Arrow Software? We sell brand new, just made games at dead cheap prices. For a price list, please send an SAE marked Arrow Software to my address. Hang on, there's a potential news story here!

Thank you very much and keep up the good work!

Yours sincerely, Andrew Precious.

I think you may have difficulty in tracking down paper of the exact type used for the Timex (or the Alphacom as it was sold at first in the UK) but lots of people are using cut down rolls of fax paper.

PLUS Ds and disc drives are still available from Datel but I do not have contact with them these days (we don't talk to them because they owe us so much money for the royalties on the PLUS D system tape) so I can't give you a price.

And let me have more details on the software front Andrew. ***Ed.***

Dear Editor,

Might I enter a brief plea for some understanding of Adrian Walker and Nicolas, who found no joy in getting to grips with SAM. First, Alan Harper and you, Bob, are so close to the technology and its strange wonders, that perhaps it is difficult for you to put yourselves in the place of, maybe, a novice, with little sympathy for the art; opening the box, struggling with the first 14 pages on the manual, setting up with some doubts and difficulty, and then? A little further into the manual and it dawns upon the reader that some real hard graft into new thinking is going to be needed, which is what our friends, unprepared, had little aptitude and no wish for. Maybe.

It is difficult to put ones self into another's but could you imagine the reaction on reading, for instance, the first para on p.61 of the manual? Ettrick seems to have understood it, but I can't (Even with his help!) Neither can I get to grips with machine code. Similarly, I also find a lot of ***FORMAT*** rather beyond me, and never having had a PLUS D or the other whatsit, don't expect to catch up on that part of it. Never mind. Its a pity about Nicolas, but I have no doubt that he is very good at something else, and some of us are not very good at anything, but we get by.

But you are absolutely right in that once you get the hang of SAM's Basic the sky's the limit - its just that barrier of not getting enough initial - no, elementary, help; simple programs and articles like those we used to see every month in Your Sinclair and ZX Computing, are not available now, because the world has moved on. So, is there something you could do for the Adrians and the Nicolases? There have been some most welcome 'basic' articles in ***FORMAT*** and I hope they will continue to appear, but perhaps what might be of more help could be an article or two envisaging a project program, (a subject, in fact), followed by the outline plan with the PROCs required, and a blow by blow description of the final program. I find it sad that two potential SAM fans have been lost to the fold for the want of encouragement. (Should we pause to query whether we are too fond of our penny-farthings in the day of the BMX. Shocking Thought!). It is very strange, though, that Adrian did not realise what a competent word-processor SAM can be, even if nothing else was attractive enough.

Yours sincerely, John Saunders.

One of the problems I have is that I can only help people when they ask for it. If, as has happened many times in the past, I get several people ringing for help on a particular subject, then I will try to find someone willing to write an article that covers the area where understanding seems to be lacking.

It is not a crime to say "I don't understand, could you please explain it to me", in fact I consider helping people in this way to be the most important role we have.

Often the explanation in the printed article is enough for most readers, but it may well leave a few others totally confused. Explaining things in a different way, or pointing people to past articles that lay the gound-work needed to understand, is all that is really needed. Between our telephone Hotline, Ray's excellent efforts with the Help Page and of course the Letters Page, there is always a route to an answer to anyones problem. I am saddened when readers say that things are beyond them but have never lifted phone or pen to ask for help. If people want to learn then we will take all the time we have, to make sure they get to the level of knowledge they want. ***Ed.***

Dear Editor,

First of all congratulations and thanks for the superb service regarding the repair of my SAM Elite - collected Thursday afternoon and returned the following Tuesday. It must be some sort of record. When I returned my Nokia TV for a check-up it was away for 4 weeks!

As you know I was having trouble with the display when using the RGB scart connections. The screen would blank out every time a disc drive was accessed and the display would break up with vertical black lines which made the screen unreadable. However, after the repair - a new ASIC - the screen display was OK but there was still the problem when a disc drive was used.

Whilst browsing through back issues of ***FORMAT*** looking for the articles about modifying PCG's Wordmaster I caught sight of Ray Bray's Help Page in the December '95 issue where he answered a query about connecting a Spectrum 128 to a Sony TV. He mentioned that it was sometimes necessary to connect a resistor with a value between 100 Ohms and 1KΩ in order to get a stable picture. I replaced the wire link between pins 16 and 20 (shown in the diagram on p 172 of The User's Guide) in the TV plug with 1K resistor and this has cured the problem. I hope this snippet of information may be of use to anyone with a similar problem, it is worth a try and certainly should do no harm. This is another example of how useful ***FORMAT*** can be!

Once again many thanks for all the help and efficient service.

Yours sincerely, David Neal.

Dear Editor,

I am enclosing a cheque to cover my subscription to ***FORMAT*** for the next 12 months.

When the issues (Oct/Nov) which contained the reminder to renew arrived, I was over in America with my daughter (she was presenting us with another lovely grand-daughter) and I am sorry but by the time I had sorted through the plethora of mail etc., which awaited us on our return in February, the due date had long since passed.

Is it possible to 'back-date' my subscription to the last issue that I received (November '95)? If this is not feasible, then can I buy the back issues separately?

Please accept my apologies for this mess, I shall have to be more careful in the future.

Thanking you for an excellent magazine, I only wish that it contained a few more articles for Spectrum Plus 3. Having said that, I still think that you produce an outstanding publication, especially with the very limited circulation that you have to endure.

Yours sincerely, Mr A.Ward.

Congratulations on the new grand-daughter Mr Ward, we hope mum and baby are doing well.

Unless people tell us otherwise, we always back-date renewals to save members the hassle of ordering back issues. The only time we don't do this is if the membership has lapsed for more than 9 months because in that situation we would be sending a fresh renewal out straight away which could cause confusion. ***Ed.***

Dear Editor,

In the March issue, Vol.9 N°7 you published a letter of mine with a short machine code routine on page 36 but unfortunately there was a line missing so here it is again:-

```
 5 REM ** ALTER DRIVE **
10 CLEAR 39999
20 LET adr=40000
30 FOR f=0 TO 5: READ a: POKE
   adr+f,a: NEXT f: DATA 62,01
   ,207,33,251,201
40 INPUT "Drive No 1-2? ";d
50 POKE adr+1,d
60 RANDOMIZE USR adr
```

Yours sincerely, Derek Crabtree.

Most sincere apologies everyone I obviously missed the line out while I was typing it in, ***Jenny.***

Dear Editor,

For the Spectrum. I have been in touch with these people and it is alright to put their names in ***FORMAT.***

Tradeing Post, Victoria Road, Shifnal, Shropshire, TF11 8AF, Tel 01952 462135, spares only for the Spectrum.

SRS Ltd., 94, The Parade, Watford Herts, WD1 2AW, Tel 01923 226602, for second hand computers, including Spectrums. The owner told me it was cheaper to buy second-hand than to have them repaired.

WTS Electronics Ltd. Studio Master House, Chaul End Lane, Luton, Beds LU4 8EZ. Tel 01582 491949 for repairs.

Cash Converters they have branches around the country, they buy and sell second hand.

If you want any more addresses on Spectrums let us know, there again other readers might send you some, (you hope)

For starting up a user group, I have had only one reply, up to now. But time will tell. I hope.

Give my love to Jenny!!

Yours Sincerely, Norman (your best mate) Fryer.

Thanks Norm, nice to hear from you again. ***Ed.***

Dear Editor,

In the August 1995 issue of ***FORMAT***, you published an article of mine on the programs I had developed for the control of keyboard instruments using the MIDI output port on SAM.

The programs described used SAM in its unexpanded memory mode. This limited the amount of RAM available for music data to about 32K and resulted in music playing times of about 2 to 3 minutes.

At that time, as I said in my article, I had not managed to use the SAM paging system. However since that time I have got to grips with the paging system, thanks to Carol Brooksbank's excellent series 'Machine Code without Tears' also helped by some helpful comments from Ray Bray's Helpline page.

I have now managed to produce MIDI sequencer programs that utilise the whole of SAM's RAM, except for the bit used by SAMDOS.

The program now has the capability of storing music data with about 35 minutes playing time. Again I have two versions of the program. One is for keyboards and stores not pitch data and channel data with constant volume, whilst the other version has note pitch data and note volume data for electronic pianos.

I am wondering whether you would like me to do a follow up article on my previous effort. If you are interested perhaps you will just give me the go ahead.

Yours sincerely, Peter Williamson.

Look forward to it Peter, and in the meantime if any reader wants to contact you about Midi we will pass on the letters. ***Ed.***

Dear Editor,

I thoroughly enjoyed reading the latest issue (Vol.9 N°6) of ***FORMAT***. I always do anyway but that's beside the point, but I thought that the issue you raised in The Editor Speaks page was particularly timely, that of Spectrum repair services (or rather the virtual non-existence of them).

Without mentioning names at this point, I am as many readers will be aware, of a certain establishment who does on occasion advertise this service. However, my experience of their 'Services' I regret to say, leaves much to be desired.

Since sending off my backup computer (a Sinclair Spectrum+ 128) for a full repair service in late September, I subsequently received someone else's machine which of course I had to return, and waited for over three months before finally receiving my computer, which now has a completely different load of innards from the original (accept for the CPU, all chips including the vital and now very scarce ULA are soldered into position, not plugged in). And after spending £48 it's right hand CAPS SHIFT key won't work, making the job of typing somewhat less than convenient.

Some might say I'm being over critical, and yet one can't help feeling ripped off

by this experience.

I wonder how much money a Spectrum owner would be prepared to pay for a replacement ULA chip to save his beloved Speccy from going to silicon heaven?

Thanks for putting up with my grumble.

Yours sincerely, C.A.Walford.

Dear Editor,

The following companies still repair Spectrums. Perhaps you would pass on a copy of this letter to the person who wanted the information.

REPAIRS etc:-

J.R.C.Camera Repairs, 2, Forge Cottage, The Street, Ewelme, Oxon, OX10 6HQ. Tel 01491 834403.

Electronic Services, 33, City Arcade, Coventry, CV1 3HX. Tel 01203 224632.

Heath Computers, Unit 3, Speedwell Trading Estate, Kings Road, Tyseley, Birmingham, B11 2AT. Tel 0121 772 1200.

Membranes and spares can be obtained from: The Trading Post, Victoria Road, Shifnal, Shropshire, TF11 8AF. Tel 01952 462135, but they don't do repairs.

It is advisable to ring around first to find out exactly what the terms and conditions are and give a rough description of the fault as some may only repair certain faults or certain models. Also, some have a fixed charge and some only charge for work done. As I had no difficulty finding these names I should think there may be other companies throughout the county who only advertise in the local press or in the Yellow Pages.

Yours Sincerely, Stanley Betts.

Dear Editor,

I am writing to you regarding Spectrum repairs.

At the moment I have two black +2A's. Within the last year I have had problems with both of them. Each time a quick ring to Trading Post on 01952 462153 bought me a brand new Mother Board for £10 plus postage and packaging. Both machines were up and running within a few days. I know it is a bit of a risk because the problem might not be on the Mother Board.

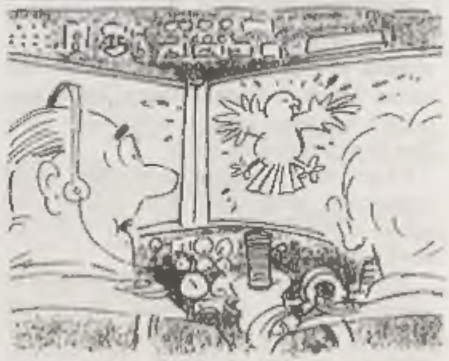
If you were lucky enough to find a repairer it could cost you nearly £30 for the repair. A repairer I can recommend for the Spectrum is H.E.C. 47-49 Hindley street, Leigh, Lancs. Telephone number 01942 672424. Leigh is in Lancashire near Wigan and Manchester. They also repaired my PLUS D's disc drive a few years ago.

Yours sincerely, John Turner.

Well, we certainly have had a good response on the Spectrum repairers front, sorry that some addresses have been printed more than once but it would have made my job in editing far to difficult if I had tried to remove duplicates. If anyone knows of any other companies then please let us know. ***Ed.***

Letters may be shortened or edited to fit on these pages although we try to edit as little as possible.

This is YOUR letters page so it is up to you to fill it with interesting things. Come on, get writing, any subject even remotely related to computers. Just keep things as short as you can so we can fit in as many as possible each month. Please write clearly or type your letters. Send them to the address on page 3 or fax them to us on 01452 380890



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FORMAT READERS SERVICES

FORMAT BINDERS

We are sorry to say that the range of binders we have been selling for a number years has now been discontinued.

We are urgently attempting to source a new binder and will bring you news of it as soon as we can. In the meantime, if any reader has a source for a suitable A5 binder we would love to hear from you.

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